REMARKS

In view of the following reasoning for allowance, the applicants hereby respectfully request further examination and reconsideration of the subject application.

35 USC 112 Second Paragraph Rejection of Claims 1-9, 10-14, 16-22, 24 and 25.

Claims 1-9, 10-14, 16-22, 24 and 25 are rejected as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 and 6 were rejected because these claims do not include a structure. In response the applicants have included a structure of a computing device in the body of the claim.

Claims 1, 6, 10 and 24 were rejected because the term "certain" was used. In response the applicants have deleted this term from these claims.

Claims 1, 10 and 24 were rejected because they do not specify what the known locations are. The applicants do not find the term "known locations of said images" in Claims 1, 10 and 24 as cited by the Examiner. They recite "known locations in said image" which is not indefinite. A person with ordinary skill in the art would know what a known location in an image is.

Claims 1, 6 and 10 were rejected because it was unclear how the computer user is required to locate at least one or more deformed body parts and/or feature in the image. However, there are many well known ways in which a computer user can locate something in an image (e.g., via pointing and clicking with a cursor, via clicking and dragging a window, via touching a touch screen). How this implemented is not a necessary limitation to this claim by any applicable law or rule.

Claims 1, 6 and 10 are rejected for omitting essential steps because they do not include an outputting action.* In response the applicants have amended these claims to include an outputting action.

Claim 8 was rejected because there was not antecedent basis for "the computer-user-identified feature locations". In response, the applicants have deleted the term "the".

Claims 9 and 10-14 and 16-22 were rejected as being hybrid claims. Claim 9 is cancelled so this rejection as to Claim 9 is moot. As to Claims 10-14 and 16-22, the Examiner cites MPEP 2173.05 (p) which it is alleged states these claims must be drawn to either a process or machine but not both. However, per MPEP 2173.05 (p) there are many situations where claims can be permissively drafted to include a reference to one or more statutory classes. In fact, the first line of MPEP 2173.05 (p) specifically states this,

"2173.05(p) Claim Directed to Product-By- Process or Product and Process [R-5]

There are many situations where claims are permissively drafted to include a reference to more than one statutory class of invention.

I. PRODUCT-BY-PROCESS

A product-by-process claim, which is a product claim that defines the claimed product in terms of the process by which it is made, is proper. *In re Luck,* 476 F.2d 650, 177 USPQ 523 (CCPA 1973); *In re Pilkington,* 411 F.2d 1345, 162 USPQ 145 (CCPA 1969); *In re Steppan*, 394 F.2d 1013, 156 USPQ 143 (CCPA 1967). **A claim to a device, apparatus, manufacture, or composition of matter may contain a reference to the process in which it is intended to be used without being objectionable under** 35 U.S.C. 112**, second paragraph, so long as it is clear that the claim is directed to the product and not the process.**

An applicant may present claims of varying scope even if it is necessary to describe the claimed product in product-by-process terms. *Ex parte Pantzer*, 176 USPQ 141 (Bd. App. 1972)." (emphasis added)

Claim 10, as amended, specifically calls out a system of a general purpose computing device and a computer program. The program modules are executable by the computing device. Claim 10 claims a special computing device that includes

a computer program with modules for carrying out certain actions. **It is clear that Claim 10 and the claims that depend from it are directed to a product (a system) and not a process. Claim 10 and the claims that depend from it are in compliance with MPEP 2173.05 (p).**

Therefore, withdrawl of the rejection of Claims 1-9, 10-14, 16-22, 24 and 25 is respectfully requested.

The 35 USC 101 Rejection of Claims 9, 10-14 and 16-22 under 35 USC 101

Claims 9, 10-14 and 16-22 stand rejected under 35 USC 101 because it was alleged that the claimed invention is directed to non-statutory subject matter. Claim 9 was cancelled so that this rejection with respect to Claim 9 is moot. As discussed above, Claims 10-14 are proper under MPEP 2173.05(p). Claim 10 and the claims that depend from it relate to a system. Nothing in MPEP 2173.05(p) precludes the structure of the applicants claims. Reconsideration of this rejection is respectfully requested.

The 35 USC 101 Rejection of Claims 23-25

Claims 23-25 stand rejected under 35 USC 101 because it was alleged that the claimed invention is directed to non-statutory subject matter because no computer was claimed. However, Claim 23 is not directed towards a computer but a computer readable storage medium for storing executable instructions. No actual execution of the instructions is required for there to be infringement. Hence, Claims 23-25 comply with 35 USC 101.

The 35 USC 103 Rejection of Claims 1-4, 7-11, 13, 17-19, 21 and 22.

Claims 1-4, 7-11, 13, 17-19, 21 and 22 were rejected under 35 USC 103(a) as being unpatentable over Tyree USPGPUB No. 2002/0120853) in view of Greg Mori et. al "Estimating Human Body Configurations using Shape Context Matching" (herein

referred to as Mori. The Examiner contended that Tyree teaches all the elements of the applicants claims but does not teach the applicant's claimed image that contains body parts, and location of such parts, but that Mori teaches an algorithm for locating keypoints within an undistorted image of a body, making the applicant's claimed invention obvious. The applicants respectfully traverse this contention of obviousness.

In order to deem the applicants' claimed invention unpatentable under 35 USC 103, a prima facie showing of obviousness must be made. To make a prima facie showing of obviousness, all of the claimed elements of an applicants' invention must be considered, especially when they are missing from the prior art. If a claimed element is not taught in the prior art and has advantages not appreciated by the prior art, then no prima facie case of obviousness exists. The Federal Circuit court has stated that it was error not to distinguish claims over a combination of prior art references where a material limitation in the claimed system and its purpose was not taught therein (*In Re Fine*, 837 F.2d 107, 5 USPQ2d 1596 (Fed. Cir. 1988)).

> "1. A computer-implemented process for determining whether a computer user is a human or a computer program, comprising the process actions of:
>
> using a computer for generating a human interactive proof employing an image of one or more deformed body parts wherein features of the deformed body parts are at known locations in said image wherein generating the human interactive proof comprises:
>
> inputting a first texture map and a generic model of a body part;
>
> generating a confusion texture map which distributes features of the body part differently from the first texture map;
>
> generating a transformation of a pose of the body part using the generic model;
>
> performing local deformations to features of the body part using the generic model;
>
> generating an image with the deformed and transformed body part with the confusion texture map applied to be used as a test image in the human interactive proof;
>
> requiring a computer user to locate at least one feature of said deformed body part in the image;
>
> comparing the computer user's locations of said at least one feature of said deformed body part to its known location in the image created using the deformed and transformed body part with the confusion texture map applied; and
>
> determining whether the computer user is a human or a computer program using the comparison of the computer user's location of said at least one feature to the known location and outputting this determination.

6. A computer-implemented process for determining whether a computer user is a human or a computer program, comprising the process actions of:

using a computing device for generating a human interactive proof employing an image of one or more deformed body parts wherein features thereof are at known locations in said image, comprising:

inputting a first texture map, T_m, and a generic model of a body part;

generating a confusion texture map, T_c, which distributes features of the body part differently than from the first texture map;

generating a transformation of a pose of said body part using said generic model;

performing local deformations to features of said body part;

generating an image, F_h, with a deformed and transformed mesh with the first texture applied;

generating an image, F_c, with the deformed and transformed mesh with the confusion texture map applied;

generating an image, I_1, with F_c as background and a shrunken F_h as foreground;

generating an image, I_2, by making L copies of the confusion texture map that are scaled down in size and put into I_1 with varying sizes and locations;

generating an image, I_3, by

making a number of copies of F_c and randomly putting these copies of F_c into I_2;

dividing the image, I_3, into M+1 regions, where M of the regions come from F_c and one region comes from F_h;

calculating the average intensity of the M regions and remapping the intensity of each region such that the average intensities are uniformly distributed across the M+1 regions;

randomly dividing each of the M+1 regions said region into four quadrants and increasing the intensity of some quadrants, while decreasing the intensity of other quadrants; and

generating a final image, I_F, to be used as the image of the human interactive proof employing an image by making N copies of the feature regions in F_h and randomly putting said N copies into I_3 to generate the final test image I_F;

requiring a computer user to locate at least one feature of said one or more deformed body parts in the image;

comparing the computer user's locations of said at least one feature of said one or more body deformed parts to their known location in the image; and

determining whether the computer user is a human or a computer program based on the comparison of the computer user's locations to the known locations and outputting this determination.

And,

10. A system for creating a Human Interactive Proof using an image of a face, the system comprising:

a general purpose computing device; and

a computer program comprising program modules executed by the computing device, the computer program modules further comprising modules to,

generate a human interactive proof employing an image of a deformed human face wherein features of the deformed human face are at known locations in said image, wherein the module for generating a human interactive proof comprises sub-modules for:

inputting a first texture map, T_m, and a generic model of a face;

generating a confusion texture map, T_c, which distributes features of the face differently than from the first texture map;

generating a transformation of a pose of the face using said generic model;

performing local deformations to features of the face;

generating an image, F_h, with a deformed and transformed mesh with the first texture applied;

generating an image, F_c, with the deformed and transformed mesh with the confusion texture map applied;

generating an image, I_1, with F_c as background and a shrunken F_h as foreground;

generating an image, I_2, by making L copies of the confusion texture map that are scaled down in size and put into I_1 with varying sizes and locations;

generating an image, I_3, by

making a number of copies of F_c and randomly putting these copies of F_c into I_2;

dividing the image, I_3, into M+1 regions, where M of the regions come from F_c and one region comes from F_h;

calculating the average intensity of the M regions and remapping the intensity of each region such that the average intensities are uniformly distributed across the M+1 regions;

randomly dividing each of the M+1 regions, said region into four quadrants and increasing the intensity of some quadrants, while decreasing the intensity of other quadrants; and

generating a final image, I_F, to be used as the image of the human interactive proof employing an image by making N copies of feature regions in F_h and randomly putting said N copies into I_3 to generate the final test image I_F;

require a computer user to locate certain features of said deformed face in the image;

compare the computer user's locations of said features of said deformed face to their actual location in the image; and

determine whether the computer user is a human or a bot based on the comparing and output this determination.

In contrast, Tyree teaches a technique that can include a test performed by a computer to determine whether a requestor of resources is a human user or a computer software scripted agent. If the test is passed, then the computer of the present invention assumes that the requestor of resources is a valid human user and access to resources is granted. It can be used for controlling access to resources. In an exemplary embodiment the method can include the steps of receiving a request from an entity; presenting the entity with a test; determining from the test whether or not the entity is an intelligent being; and granting the request only if the entity is determined to be an intelligent being. (Abstract) **However, Tyree does not teach the applicant's claimed requiring a computer user to locate at least one feature of a deformed body part in the image created using the deformed and transformed body part with the confusion texture map applied. In fact, Tyree doesn't require a user to identify any points or locations in an image. Nor does Tyree teach comparing the computer user's locations of a feature of a deformed body part to their known location in the test image; and determining whether the computer user is a human or a computer program using the comparison of the computer user's location of the at least one feature to the known location in the image.**

Mori teaches taking a single two-dimensional image containing a human body, locating the joint positions, and use these to estimate the body configuration and pose in three-dimensional space. The basic approach is to store a number of exemplar 2D views of the human body in a variety of different configurations and viewpoints with respect to the camera. On each of these stored views, the locations of the body joints (left elbow, right knee etc) are manually marked and labelled for future use. The test shape is then matched to each stored view, using the technique of shape context matching. Assuming that there is a stored view sufficiently similar in configuration and pose, the correspondence process will succeed. The locations of the body joints are then transferred from the exemplar view to the test shape. Given the joint locations,the 3D body configuration and pose are then estimated. **However, Mori does not teach the applicant's claimed requiring a computer user to locate at least one feature of a deformed body part in an image created using the deformed and transformed body part with a confusion texture map**

applied. Nor does Mori teach comparing the computer user's locations of the at least one feature of a deformed body part to their known location in the image; and determining whether the computer user is a human or a computer program using the comparison of the computer user's location of said at least one feature to the known location.

It is also the applicants position that the reasoning as to obviousness presented in the Office Action is flawed. There is nothing to teaching, motivation or suggestion to combine the teachings of Tyree and Mori. The Tyree and Mori inventions are in entirely different fields, address entirely different problems, and nothing in one would suggest the other.

The Examiner appears to suggest that since in Mori the program can locate key points in an undistorted body, it would be implied that it can locate key features in the image if it was distorted. There is nothing in Mori to suggest this implication.

The MPEP states at Section 2112, Part IV (Page 2100-54, Rev 2, May 2004) that:

> "**The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic.** *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993) (reversed rejection because inherency was based on what would result due to optimization of conditions, not what was necessarily present in the prior art); *In re Oelrich*, 666 F.2d 578, 581-82, 212 USPQ 323, 326 (CCPA 1981). "**To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.'** " *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999) (citations omitted) ....."**In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent**

characteristic necessarily flows from the teachings of the applied prior art." *Ex parte Levy,* 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis added)

The Examiner has not shown that the claimed feature of the applicant's claimed **requiring a computer user to locate at least one feature of one or more deformed body parts in the image created using the deformed and transformed body part with the confusion texture map applied** is taught either expressly or inherently in the Tyree or Mori references. **The reasoning for obviousness is flawed in that neither reference teaches a user locating features of deformed body parts in an image and comparing these user-identifed features to determine if a user is a computer or a bot. As shown above, the teachings of Mori would not suggest to a person of ordinary skill in the art that a computer user should be required to locate at least one deformed feature of said one or more body parts in the image the created using the deformed and transformed body part with the confusion texture map applied.** Rather the circumstances of the Mori would suggest just the opposite. In Mori a user is used to mark the undeformed features in order to locate the correct parts in order to create a three-dimensional image from two or more two-dimensional ones. There simply is no need for deformed image in Mori and nothing in Mori suggests deforming an image. **The mere possibility that Mori could lead someone to think of a way of generating a deformed image is not enough to establish inherency. There must be some teaching that makes the missing element necessary to the described invention of Mori. However, there is no such teaching. Therefore, the claimed features are not inherent in the teaching of Mori. The Examiner has never responded to this lack of inherency.**

Since neither Tyree nor Mori teach the applicants' claimed requiring a computer user to locate at least one feature of one or more deformed body parts in an image created using the deformed and transformed body part with the confusion texture map applied; comparing the computer user's locations of the at least one feature of said one or more body deformed parts to their known location in the image created using the deformed and transformed

body part with the confusion texture map applied; and determining whether the computer user is a human or a computer program using the comparison of the computer user's location of said at least one feature to the known location, the combination does not teach it. Nor do Mori and Tyree teach the allowable claim limitations of generating the human interactive proof. Additionally, the Tyree nor Mori references do not teach the advantageous features of the applicants' claimed invention such as providing a more difficult proof to determine if a an entity performing a HIP is a person or a bot. Accordingly, no prima facie case of obviousness has been established in accordance with the holding of *In Re Fine*. This lack of prima facie showing of obviousness means that the rejected claims are patentable under 35 USC 103 over Tyree in view of Mori. As such, it is respectfully requested that Claims 1-4, 8-11, 13, 17-19, 21 and 22 be allowed based on the above-referenced novel and non-obvious claim language.

C. The 35 USC 103 Rejection of Claim 5.

Claim 5 was rejected under 35 USC 103(a) as being unpatentable over Tyree USPGPUB No. 2002/0120853) in view of Mori and in further view of Luis von Ahn et al. "CAPTCHA: Using Hard AI Problems for Security" hereinafter referred to as Ahn. The Examiner contended that Tyree and Mori teach all the elements of the applicants claims but do not teach the applicant's claimed use of a HIP for online polls, email account services, search engines which are examples of network resources and storage facilities. The Examiner contended it would have been obvious to combine the teachings of Tyree and Mori with Ahn, rendering the applicants claimed invention obvious. The applicants respectfully disagree with this contention of obviousness.

The applicants claim,

"1. A computer-implemented process for determining whether a computer user is a human or a computer program, comprising the process actions of:

using a computer for generating a human interactive proof employing an image of one or more deformed body parts wherein features of the deformed body parts are at known locations in said image wherein generating the human interactive proof comprises:

inputting a first texture map and a generic model of a body part;

generating a confusion texture map which distributes features of the body part differently from the first texture map;

generating a transformation of a pose of the body part using the generic model;

performing local deformations to features of the body part using the generic model;

generating an image with the deformed and transformed body part with the confusion texture map applied to be used as a test image in the human interactive proof;

requiring a computer user to locate at least one feature of said deformed body part in the image;

comparing the computer user's locations of said at least one feature of said deformed body part to its known location in the image created using the deformed and transformed body part with the confusion texture map applied; and

determining whether the computer user is a human or a computer program using the comparison of the computer user's location of said at least one feature to the known location and outputting this determination."

As discussed above, neither Tyree nor Mori teach **the applicants' claimed requiring a computer user to locate at least one feature of the one or more deformed body parts in the image; comparing the computer user's locations of the at least one feature of one or more body deformed parts to their known location in the image created using the deformed and transformed body part with the confusion texture map applied; and determining whether the computer user is a human or a computer program using the comparison of the computer user's location of said at least one feature to the known location. Ahn also does not teach these limitations, so the combination of Tyree, Mori and Ahn do not teach them. Nor does the cited art teach the applicants' claimed specific actions of generating a human interactive proof.** Additionally, the Tyree, Mori and Ahn references do not teach the advantageous features of the applicants' claimed invention such as providing a more difficult proof to determine if a an entity performing a HIP is a person or a bot. Accordingly, no prima facie case of obviousness has been established in accordance with the holding of *In Re Fine*. This lack of prima facie showing of obviousness means that the rejected claim is patentable under 35 USC 103 over Tyree in view of Mori and Ahn. As such, it is respectfully requested that Claim 5 be allowed based on the aforementioned novel and non-obvious claim language.

D. The 35 USC 103 Rejection of Claims 12, 16, 20 and 23-25.

Claims 12, 16, 20 and 23-25 were rejected under 35 USC 103(a) as being unpatentable over Tyree in view of Mortlock et al., U.S. Patent No. 6,549,200 (hereinafter referred to as Mortlock). The Examiner contended that Tyree teaches all of the elements of the applicants' claims but does not teach the applicant's claimed image of a distorted face embedded in a cluttered background. The Examiner contended that Mortlock discloses the ability to create an image of a human head/face making the applicants' claimed invention obvious. The applicants respectfully traverse with this contention of obviousness.

The applicants claim,

"10. A system for creating a Human Interactive Proof using an image of a face, the system comprising:
a general purpose computing device; and
a computer program comprising program modules executed by the computing device, the computer program modules further comprising modules to,
generate a human interactive proof employing an image of a deformed human face wherein features of the deformed human face are at known locations in said image, wherein the module for generating a human interactive proof comprises sub-modules for:
inputting a first texture map, T_m, and a generic model of a face;
generating a confusion texture map, T_c, which distributes features of the face differently than from the first texture map;
generating a transformation of a pose of the face using said generic model;
performing local deformations to features of the face;
generating an image, F_h, with a deformed and transformed mesh with the first texture applied;
generating an image, F_c, with the deformed and transformed mesh with the confusion texture map applied;
generating an image, I_1, with F_c as background and a shrunken F_h as foreground;
generating an image, I_2, by making L copies of the confusion texture map that are scaled down in size and put into I_1 with varying sizes and locations;
generating an image, I_3, by
making a number of copies of F_c and randomly putting these copies of F_c into I_2;
dividing the image, I_3, into M+1 regions, where M of the regions come from F_c and one region comes from F_h;

calculating the average intensity of the M regions and remapping the intensity of each region such that the average intensities are uniformly distributed across the M+1 regions;

randomly dividing each of the M+1 regions, said region into four quadrants and increasing the intensity of some quadrants, while decreasing the intensity of other quadrants; and

generating a final image, I_F, to be used as the image of the human interactive proof employing an image by making N copies of feature regions in F_h and randomly putting said N copies into I_3 to generate the final test image I_F;

require a computer user to locate certain features of said deformed face in the image;

compare the computer user's locations of said features of said deformed face to their actual location in the image; and

determine whether the computer user is a human or a bot based on the comparing and output this determination.

And,

"23. A computer-readable storage medium having computer-executable instructions stored thereon for creating a test to determine whether a user is a person or a bot, said computer executable instructions comprising:

inputting a 3D wire model of a generic head with a face and a first texture map of an arbitrary person; and

generating a human interactive proof using said generic head model and the first texture map, by:

inputting the first texture map, T_m, and the generic model of a head with the face;

generating a confusion texture map, T_c, which distributes features of the face differently than from the first texture map;

generating a transformation of a pose of the face using the generic model;

performing local deformations to features of the face;

generating an image, F_h, with a deformed and transformed mesh with the first texture applied;

generating an image, F_c, with the deformed and transformed mesh with the confusion texture map applied;

generating an image, I_1, with F_c as background and a shrunken F_h as foreground;

generating an image, I_2, by making L copies of the confusion texture map that are scaled down in size and put into I_1 with varying sizes and locations;

generating an image, I_3, by

making a number of copies of F_c and randomly putting these copies of F_c into I_2;

dividing the image, I_3, into M+1 regions, where M of the regions come from F_c and one region comes from F_h;

calculating the average intensity of the M regions and remapping the intensity of each region such that the average intensities are uniformly distributed across the M+1 regions;

randomly dividing each of the M+1 regions, said region into four quadrants and increasing the intensity of some quadrants, while decreasing the intensity of other quadrants; and

generating a final image, I_F, to be used as the image of the human interactive proof employing an image by making N copies of the feature regions in F_h and randomly putting said N copies into I_3 to generate the final test image I_F."

Tyree does not teach the applicant's claimed generation of a human interactive proof employing an image of a human face wherein certain features of the deformed body parts are at known locations in said image created using the deformed and transformed body part with the confusion texture map applied, or the applicants' claimed specific actions of generating a human interactive proof.

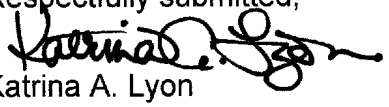
Mortlock teaches an image representing a three-dimensional object that is modelled as a stored set of parameters representing a model of a three-dimensional object and at least two two-dimensional images of the object, each image representing the object from a unique direction of view (x, y, z). The parameters include parameters defining the positions of a plurality of vertex points in a virtual space and parameters defining relationships between vertex points and hence surface elements of the object. For at least a subset of the surface elements a measure relative to each direction of view is determined, each measure being representative of the deviation of the surface of the element from the normal to the direction of view. The direction of view which exhibits the least deviation is then identified and texture applied to the surface element from the two-dimensional image which corresponds to the identified direction of view. (Abstract) **However, Mortlock does not teach the applicant's claimed generation of a human interactive proof employing an image of a human face wherein features of the deformed body parts are at known locations in the image created using the deformed and transformed body part with the confusion texture map applied, or the applicants' claimed specific actions of generating a human interactive proof.**

Since neither Tyree nor Mortlock teach the applicants' claimed **generation of a human interactive proof employing an image of a human face wherein certain features of the deformed body parts are at known locations in the image, or the applicants' claimed specific actions of generating a human interactive proof, the combination does not teach it.** Additionally, the Tyree and Mortlock references do not teach the advantageous features of the applicants' claimed invention such as generating a more effective HIP by using body parts. Accordingly, no prima facie case of obviousness has been established in accordance with the holding of *In Re Fine*. This lack of prima facie showing of obviousness means that the rejected claims are patentable under 35 USC 103 over Tyree in view of Mortlock. As such, it is respectfully requested that Claims 12, 16, 20 and 23-25 be allowed based on the aforementioned exemplary novel and non-obvious claim language.

E. Summary.

In summary, it is believed that Claims 1-6, 8-9,10-14 and 16-25 are in condition for allowance. Allowance of these claims at an early date is courteously solicited.

Respectfully submitted,



Katrina A. Lyon
Registration No. 42,821
Attorney for Applicants

LYON & HARR, LLP
300 Esplanade Drive, Suite 800
Oxnard, CA 93036
(805) 278-8855